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PUBLIC HEALTH DEPARTMENT,  
GUILDHALL, CAMBRIDGE.

March 20th, 1933.

*To the Chairman and Members of the Local Education Authority.*

MR. CHAIRMAN, LADIES AND GENTLEMEN,

I have the honour to present for your consideration the 25th Annual Report upon the medical inspection of the elementary school children in Cambridge.

There are a few points of interest to which attention might be directed, viz. :—

- (1.) The opening of two new Infant Schools.
- (2.) The approval by the Board of Education of the Special School at Milton Road.
- (3.) The remarkable freedom from Diphtheria; the number of cases notified being the lowest we have yet experienced.
- (4.) The report upon the Open Air School by Dr. Smyth, and the report upon Artificial Light Treatment at the Open Air School.

I am,

Your obedient Servant,

ANDREW J. LAIRD,

*School Medical Officer.*

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# Report of the School Medical Officer

FOR THE YEAR 1932.

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Population of the Borough (estimated 1931)	...	67000
Area of the Borough...	...	5457 acres
Number of Elementary Schools	...	21
Number of Departments	...	33
Average number of Children on the Registers	...	7141
Average Attendance ...	...	6445

The rise in the number of children attending the elementary schools noted in 1931, was more marked during 1932.

	1924	1925	1926	1927	1928	1929	1930	1931	1932
Average number of children on registers...	7241	7232	7126	7060	6924	6823	6805	6858	7141
Average number of children in attendance	6509	6260	6388	6273	6266	6065	6170	6256	6446

## Staff.—

School Medical Officer...	...	Andw. J. LAIRD, M.D., C.M., D.P.H.
Assistant School Medical Officer		Evelyn B. G. EWEN, M.B., Ch.B., D.P.H. (resigned April 30th, 1932)
		Arthur J. SMYTH, M.B., B.Ch., D.P.H. (from July, 4th, 1932)
Public Dental Officer	...	W. Baird GRANDISON, L.D.S., R.C.S.
Assistant Public Dental Officer		D. B. CRICKSHANK, L.R.C.P.S., L.D.S.
Bacteriologist	...	W. H. HARVEY, M.D. (Part time)
School Nurses	...	Miss M. M. W. STEVENS Miss F. A. NICHOLLS Miss I. I. FOX (resigned May, 1932) Miss T. GIBBONS (from Sep. 1932)
Dental Attendants	...	Miss D. MALLETT Miss E. IMPEY Miss ALLENSBY
Clerk	...	Miss G. A. M. WALLIS

together with the part-time services of the Chief Clerk in the Public Health Department.

*School Premises.*—The two new Infant Schools, the Shirley School at Green End Road, and the Sedley School at Coleridge Road, were opened for use in September, 1932.

The accommodation is for 256 in each school, inclusive of two nursery classes.

The old St. Andrew's Infants' School has been transferred to the Shirley School and the premises now form part of the St. Andrew's Mixed School.

*Groups of Children Inspected.*—The groups selected for routine inspection were (1) first admissions to the public elementary schools; (2) those attaining the age of eight years, and (3) those attaining the age of twelve years; groups usually referred to as "entrants," "intermediates" and "leavers."

In addition, a large group composed of children selected for inspection for some special reason, and others who were being kept under observation for some defect detected at a previous examination, were also inspected during the year.

The numbers belonging to each of those groups is shown below.

Routine Cases :	Boys	Girls.	Total.
Entrants ...	362	329	691
Intermediates ...	379	327	706
Leavers ...	429	406	835
	—	—	—
	1170	1062	2232
	—	—	—

Special Inspections, 1678; re-inspections, 1288.

The number at routine inspections represents 34 per cent. of the number of children in average attendance.

The fluctuations in the routine groups from 1926 are shown below :—

	1926	1927	1928	1929	1930	1931	1932
Entrants ...	756	719	700	683	759	602	691
Intermediates ...	506	506	841	842	741	733	706
Leavers ...	697	698	600	590	470	490	835
Totals ...	1959	1923	2141	2115	1970	1825	2232

The following Table shows the number of routine inspections carried out at the various schools :—

	Entrants.	Intermediates		Leavers.			
		Boys.	Girls.	Boys.	Girls.	Boys.	Girls.
Barnwell Abbey	...	12	7	—	—	—	—
Brunswick Council	...	47	40	43	40	67	55
Central	...	—	—	—	—	115	122
Milton Road	...	35	35	51	26	12	20
Morley Memorial	...	38	32	34	29	27	31
Newnham Croft	...	8	8	13	9	—	—
New Street	...	9	9	22	22	—	—
Park Street	...	11	9	11	20	—	—
Richmond Road	...	17	12	5	1	—	—
Romsey Council	...	—	1	23	14	28	22
St. Andrew's	...	35	18	27	20	—	—
St. Barnabas	...	9	11	21	13	—	—
St. George's	...	—	—	—	—	95	76
St. Giles'	...	7	6	1	—	—	—
St. Luke's	...	26	27	39	33	49	42
St. Matthew's	...	6	23	22	36	—	—
St. Paul's	...	13	15	7	15	—	—
St. Philip's	...	85	70	48	40	28	24
Union Road R.C.	...	4	6	12	9	8	14
	362	329	379	327	420	406	
	691		706		835		

The interest taken by Parents in the inspection of their children has been well maintained. The percentage present at the routine inspections was 77.5, being a trifle higher than the previous year, and varied from 14.6 per cent. to 87.5 per cent.

#### REVIEW OF THE FACTS DISCLOSED BY INSPECTION.

The defects noted at both "routine" and "special" inspections will be found in Table II A, page 18.

The total number of "defects" found to require treatment was 1093, and the total number found requiring to be kept under observation was 632.

The number of "individual children" found at routine inspection to require treatment was 243 or 10.9 per cent. of the children examined in the three routine groups.

Among the "entrants" the percentage requiring treatment was 7.4, and among the "intermediates" and "leavers," 14.8 and 10.4 per cent. (Table II B.)

Before making any comparison of the percentage of defects in the three age groups, it should be borne in mind that the vision of "entrants" is not tested.

The average height and weight of the children are set out below, and show practically no departure from the previous year.

### Boys.

Age in Years.	No. Examined in 1932.	Average Height in Inches.					Average Weight in Pounds.				
		1911	1912	1930	1931	1932	1911	1912	1930	1931	1932
5	211	40.6	40.5	42.38	42.39	42.65	38.2	38.2	41.18	41.23	42.63
8	372	46.9	46.4	49.19	49.23	49.08	50.4	47.6	56.67	56.31	56.33
12	407	55.1	54.9	56.28	56.37	56.40	73.6	72.9	80.22	79.37	82.63

### GIRLS.

Age in Years.	No. Examined in 1932.	Average Height in Inches.					Average Weight in Pounds.				
		1911	1912	1930	1931	1932	1911	1912	1930	1931	1932
5	174	39.6	40.5	42.32	42.34	41.99	36.2	37.6	40.08	39.32	40.92
8	312	46.4	46.0	48.62	48.95	48.87	48.7	49.7	54.16	54.55	55.61
12	395	55.9	55.3	57.10	57.29	57.26	76.6	71.3	81.58	83.76	83.59

*Cleanliness and Clothing.*—The high standard of cleanliness among the elementary school children of Cambridge has been fully maintained.

The total number of individual children found unclean at school by the School Nurses during the visits they have made specially for this purpose during 1932, was 824, as compared with 834 in 1931.

The proportion found with pediculi in their heads was 2.4 per cent. In 1931 the proportion was 2.8 per cent.

No proceedings were taken under Section 122 of the Children Act, 1908, but proceedings in Court were taken under the School Attendance Bye-Laws in 12 cases, and fines from 2/6 to 4/- were inflicted in 8 of these. 1 was dismissed with a caution, and 3 convicted without penalty.

*Ringworm.*—Only 5 new cases occurred, 3 of the body and 2 of the scalp. Of these 1 was treated at Addenbrooke's Hospital, 1 at the Clinic, and 3 privately. There were no cases at the end of the year.

The new cases discovered each year from 1919 were as follows :—

1919	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	'32
58	44	39	37	24	26	15	11	14	16	2	9	12	5

*Tonsils and Adenoids.*—294 children (13.1 per cent.) had considerably enlarged tonsils, and 159 (7.1 per cent.) had slightly enlarged tonsils. 10 also suffered from adenoids. The number of children found to require treatment of tonsils and adenoids was 190, as compared with 107 in 1931.

*Defective Vision.*—The number of children found at routine inspection to have defective vision (6/12 or worse) was 180. Of these 78 required treatment, 11 were recorded for observation and the remaining 91 had already received treatment.

In addition to the above 180 children, 101 "specials" were examined, 67 during routine inspection and 34 at the Clinic. All of these children required treatment, except 4 who were recorded for observation.

*Ear Disease and Deafness.*—The number of children found with defective hearing was 18, or 0.8 per cent. of those inspected. Three had a purulent ear discharge (0.1 per cent.). The percentages for several years are given for comparison.

	1925	1926	1927	1928	1929	1930	1931	1932
Otorrhoea	0.7	0.2	0.9	0.7	0.7	0.6	0.4	0.1
Deafness	1.9	2.0	3.4	3.4	3.0	1.8	1.9	0.8

*Heart Disease.*—One hundred and forty-five children were found with some irregularity of the heart's action. The reason for this condition is by no means clear, but it is thought that it may, in most cases, be due to insufficient sleep. The opportunity was taken of impressing upon the parents and the children themselves, the necessity for regular hours and sufficient number of hours of sleep.

*Defects in Speech.*—Twelve stammerers were found.

*Diseases of the Nervous System.*—Three cases of Chorea (St. Vitus' Dance) were found. In addition, indications of an unstable nervous system were detected in 28 other children.

*Cripples and Deformities.*—These include children with slight after-effects of infantile paralysis; rickets 20; spinal curvature 6; flat feet 5; depressed sternum 2; round shoulders 4; defective chest expansion 2; assymetrical chest 1; rachitic chest 2; deformed toe 4; bad posture 1; pigeon breast 2; shoemaker's chest 2; knock knee 2, and 7 various other forms. The arrangements with Addenbrooke's Hospital have made it possible for every departure from the normal to have specialist advice.

*Other Defects.*—Under this heading are children suffering from general debility and anaemia. The number with anaemia, shows a decrease from 56 in 1931 to 7 in 1932.

*Vaccination.*—The proportion of children found with vaccination marks in 1932 was 30.1 per cent., this being 2.4 per cent. more than the previous year.

*Inspection Clinic.*—The Clinic is open every weekday, including Saturdays, from 9.30 a.m. until 1 p.m. The Assistant Medical Officer, three School Nurses, and a Clerk are in attendance.

The total number of children inspected at the School Clinic during 1932 was 3,387.

The attendances in 1932 numbered 6,355, an increase of 312 as compared with 1931.

The average daily attendance during 1932 was 25, the same as the previous year.

*Special Examinations for Physical or Mental Defects.*—A number of children are examined at the Clinic who come under special groups, either physical or mental. They include the children who are receiving milk in the schools on medical grounds; those whose condition suggests the need for a period at the Open Air School, and those whose mental capacity is in question.

The children specially examined for mental defect in 1932 numbered 75 (59 boys and 16 girls). The number recommended for the Special School was 30 (22 boys and 8 girls).

The number examined for physical defects was 255 (124 boys and 131 girls). Of these 247 were recommended for the Open Air School.

#### INFECTIOUS DISEASES AMONG ELEMENTARY SCHOOL CHILDREN.

The great increase in the number of cases of Infectious Disease among the children at school was due mainly to Measles and Whooping Cough. Chicken-pox, Mumps and Scarlet Fever were slightly in excess of the previous year, while Diphtheria was much less prevalent. It is gratifying to note that although there were 849 cases of Measles and Whooping Cough in the schools there was not a single death.

	1924	1925	1926	1927	1928	1929	1930	1931	1932	
Scarlet Fever	...	64	30	51	92	127	56	106	52	62
Diphtheria	...	28	24	66	51	79	162	49	23	12
Influenza	...	3	7	3	17	—	1	—	—	—
Measles	...	473	677	303	113	726	316	453	110	634
German Measles	...	8	5	607	10	24	4	5	1	2
Whooping Cough	...	15	283	101	246	46	126	242	82	215
Chicken Pox	...	260	332	259	297	121	195	244	213	250
Mumps	...	91	141	720	195	21	20	9	218	270
Ringworm	...	15	10	7	3	8	2	6	—	5
Scabies	...	—	—	1	1	—	1	—	—	1
Skin Diseases	...	1	4	14	15	16	7	13	1	12
Others	...	122	63	121	63	78	102	74	25	71
Totals	...	1080	1576	2253	1103	1246	992	1201	725	1534

The following table shows the number of cases of Scarlet Fever and Diphtheria in the elementary schools during the year.

Name of School.	Diphtheria. No. of Cases.	Scarlet Fever. No. of Cases.	Total No. of Cases.
Abbey Infants ...	0	0	0
Brunswick Boys ...	0	1	1
„ Girls ...	0	2	2
„ Infants ...	0	1	1
Central Boys ...	3	0	3
„ Girls ...	0	4	4
Milton Road Mixed ...	0	5	5
„ Infants ...	0	1	1
Morley Memorial Mixed ...	3	11	14
„ Infants ...	1	0	1
Newnham Croft ...	0	0	0
New Street ...	2	0	2
Park Street ...	0	0	0
Richmond Road ...	0	1	1
Romsey ...	0	3	3
St. Andrew's Mixed ...	0	1	1
„ Infants ...	0	2	2
St. Barnabas ...	0	1	1
St. George's Boys ...	0	0	0
„ Girls ...	0	2	2
St. Giles' Infants ...	0	0	0
St. Luke's Boys ...	1	3	4
„ Girls ...	0	6	6
„ Infants ...	0	6	6
St. Matthew's Boys ...	0	0	0
„ Girls ...	0	1	1
„ Infants ...	0	0	0
St. Paul's Mixed ...	0	3	3
„ Infants ...	0	0	0
St. Philip's Boys ...	0	3	3
„ Girls ...	1	3	4
„ Infants ...	1	2	3
Union Road R.C. ...	0	0	0
Open Air ...	0	0	0
	—	—	—
	12	62	74
	—	—	—

*Deaths of Elementary School Children.*—The total number of deaths in Cambridge of children 5—14 years of age during 1933 was 9.

The causes of these deaths were :—Diphtheria, 2; Scarlet Fever, 1; Lobar Pneumonia, 1; Encephalitis Lethargica, 1; Homicide, 1; Intestinal Obstruction, 1; Otitis Media, 1; Pneumococcal Peritonitis, 1.

*Diphtheria Immunisation.*—168 children (120 of whom were school children) attended the Clinic for Diphtheria immunisation as compared with 96 in 1931. Of these 109 were inoculated for the first time : 27 were Schick tested after previous inoculation and were found to give a negative reaction, 4 gave positive reactions : 16 were retested for the second time, 7 were still found positive, 9 were negative : 5 children were retested for the fourth time, 3 were positive, 2 negative : 2 children received re-inoculations and 5 children were sent for but did not attend owing to illness, or for other reasons.

*School Closure.*—Three departments had attendances below 60 per cent., and for these certificates were given in accordance with Circular 1337 of the Board of Education.

*The Mal-adjusted or "Difficult" Child.*—Two children (a boy and a girl) were reported upon during the year. After consultation with the Cambridge Voluntary Association for Mental Welfare they were sent to the London Child Guidance Clinic. Reports were received from the Clinic in which suggestions for dealing with the children were made. One child has since left Cambridge, and up to the present no definite action regarding the second child has yet been taken.

#### TREATMENT OF DEFECTS.

*Treatment of Defects.*—The total number of children treated for minor ailments was 646, being 8 more than the previous year. In addition treatment was given to 146 for defective vision, 75 for diseases of the throat and nose, and 4,152 for dental disease, making a total of 5,019 cases treated in 1932, as compared with 4,567 in 1931.

1. *Hospital Treatment.*—Two hundred and twenty-five school children received treatment at Addenbrooke's Hospital, the conditions requiring treatment being :—Disease of the ears, 21 ; eyes, 32 ; ringworm, 1 ; tonsils and adenoids, 77 ; skin disease, 14 ; minor injuries, 19, chorea, 1 ; various other conditions, 68 ; making a total of 233 defects in 225 children.

Under the new arrangement for payment by the Local Authority, in-patients are admitted at the rate of 8/6 per day per patient, while for out-patients the charge is 2/- for the first attendance, and 1/6 for each subsequent attendance.

In the case of operation for tonsils and adenoids an operation fee of 5/- is charged.

2. *Treatment at the School Clinic.*—The number of children treated at the school clinic was 300, a slight increase over the preceding year, while the number of attendances for treatment shows a decrease from 3,469 in 1931 to 3,268 in 1932.

3. *Eye Clinic.*—142 refractions were carried out at the Eye Clinic during 1932. Lenses were prescribed in 34 cases of hypermetropic astigmatism, 21 cases of mixed conditions, 23 cases of hypermetropia, 19 cases of myopia, and 24 cases of myopic astigmatism.

In 10 cases spectacles were found to be of no benefit, and were not prescribed; 11 cases in which lenses did not give normal vision were referred to Addenbrooke's Hospital for fuller investigation.

During the year 87 children received spectacles under the Authority's scheme. 92 per cent. of the errors of refraction dealt with during the year were dealt with at the Eye Clinic,

*External Eye Disease.*—The conditions treated were Conjunctivitis 4, Blepharitis 35, Squint 14, and various other conditions 11, making a total of 64. The total number of similar conditions in 1931 was 64, and 1930, 59.

4. *Treatment of Defects of Speech—Special Course.*—The services of a special Teacher (Miss M. Fleming) from the staff of the Central Association for Mental Welfare were engaged by the Education Committee from May 18th to June 28th, for the purpose of training children suffering from speech defects. Classes from departments other than infant departments were held each morning at the old Eden Street School from 9.30 to 12 o'clock. These classes which were attended by eleven children at a time were also used as demonstration lessons to a certain number of Teachers. A series of six lectures to Teachers were also given in the evenings.

At the end of the course Miss Fleming presented a report from which the following notes have been extracted :—

The defects found and the number of children in each group were :—

	Severe.	Moderate.	Slight.	Total.
Stammering	...	...	11	31
Lisping	...	...	1	5
Lalling and unintelligible speech	16	14	7	37
Cleft Palate	...	...	—	2
Indistinct	...	...	2	9
Other defects (unclassified as to degree)	...	...	...	4
	...	...	...	15
	...	...	...	25
				176
				Total ... ... 176

Under the heading "other defects" are included nasal quality, deafness or partial deafness; "tongue tie"; nervous hesitation; one case of mutism; partial paralysis; and the rest mainly difficulty with certain consonants.

A meeting was arranged for parents also, for as Miss Fleming points out "it is difficult to do much (to conquer the stammer) unless one has the whole-hearted co-operation of parents, as environment and influence play so large a part in its development and continuation."

Arrangements have been made for a second course of instruction during the current year.

### WORK OF THE SCHOOL NURSES.

The total number of visits made to schools in the year was 628, of which 136 were in connection with the routine medical inspections, 265 for the cleanliness survey, 8 in connection with infectious diseases, and the remainder for various other purposes.

Six visits were paid to the schools in connection with the occurrence of Diphtheria among the scholars, and "swabbings" for bacteriological examination were taken from the throats and noses of 295 children. Two, or 0.6 per cent., gave positive results.

The "home" visits numbered 3,316 in the year; 961 for the purpose of following-up cases of defects found at routine inspections, 1,773 in connection with infectious disease, and 482 visits of enquiry as to the cause of absence of children notified as ill by Head Teachers and School Attendance Officers.

The figures in 1931 were :—Total home visits 3,169, following-up 1091, infectious diseases 1520, absentees 558.

### OPEN AIR SCHOOL.

*Delicate and Physically Defective Children.*—The number on the register of the Open Air School in Milton Road at the beginning of the year was 123. During the year 112 children left and 102 were admitted, the figures for 1931 being 61 left and 62 admitted. Of the 112 children who left school during the year, 101 returned to their ordinary schools, 3 left the town, 7 had reached school leaving age, and 1 was transferred to the Special School.

The following notes upon the work of the Open Air School have been written by Dr. Smyth :—

"A grave misapprehension exists in regard to the Open Air School in the minds of many parents, causing them to deny their children the benefits of this most excellent institution."

"Many people regard this school in the light of a Tuberculosis Sanatorium.

"A consideration of the actual facts may help to remove this false impression.

Out of 109 children now at the Open Air School :—

49 are suffering from Debility, due to a variety of causes.

18 are regarded as pretubercular.

8 as suffering from Tuberculous glands.

15 are Rheumatic.

4 have Heart trouble.

"The remaining number is made up of children suffering from various troubles, such as Bronchitis, Asthma, and different forms of crippling.

"It will be seen then that only a small minority of the children is to be looked on as Tubercular. Apart, moreover, from the fact that the risk of Tuberculous infection is probably less grave at a Sanatorium than under normal conditions of life, it should be emphasised that not one of the above mentioned children regarded as pretubercular is actually a case of open Tuberculosis, and therefore none is the slightest danger as a source of such infection. Moreover, the children at the Open Air School are under the constant supervision of the Tuberculosis Officer and the Assistant School Medical Officer. So that if any child shewed signs of active Tuberculosis it would be removed to a Sanatorium.

"With reference to the results achieved at the School, the average gain in weight for the last 6 months may be quoted :—

For the boys it is more than  $3\frac{1}{2}$  lb.

For the girls more than  $4\frac{3}{4}$  lbs.

This is a very good testimonial to the food provided, and speaks well for those in charge of the catering."

*Cripples at the Open Air School.*—There is only one child suffering from severe crippling, a boy with marked scoliosis, kyphosis and consequent deformity of the chest. His general health is good and he gets on well at the Open Air School.

There are two cases of quiescent Tuberculosis disease of the spine. Both are very well.

There is one case of Tuberculosis disease of the left hip ; also quiescent ; the child is very well as far as general health is concerned.

There is one case of Knock-knee, in plaster. This child is still attending Addenbrooke's Hospital and is in very good general health.

Besides these children at the Open Air School there is a certain number with some crippling defect still at the Elementary schools.

Two of these are in wheel chairs and it is easier to wheel them to the school nearest their homes than to transport them to the Open Air School. They both enjoy their time at School and are able to benefit from the teaching.

There is one case of severe congenital heart disease at an ordinary school. Again the question of transport, and the wishes of child and parents make it advisable for the child to stay where he is. The other crippling is of minor degree and causes little or no disability.

*Malnutrition.*—A small number of under developed children have been recommended for milk at school, and 40 children have been admitted to the Open Air School during the year under the same head.

It should be noted, however, that this number includes children who are by nature undersized and poorly developed. It also includes children who have lost weight owing to some illness. Though no doubt all these children are somewhat below the average weight for their age and height, it can safely be said that not one is really undernourished.

The impression is gained that wrong feeding is very much more common than under feeding. This is probably partly due to ignorance of dietetics, and partly ignorance in that most difficult task, the right management of children.

*Rheumatism and Heart Disease.*—There is unfortunately no Heart Hospital at Cambridge, and no provision for the prolonged rest in bed which children suffering from rheumatic heart disease, really need. Acute cases, therefore, have to be sent away to such places as the West Wickham Heart Hospital, or they have to be treated at home.

The Open Air School, however, provides, through its liberal diet and extra rest, an excellent form of treatment for quiescent heart disease and for convalescent rheumatic children.

The therapeutic value of open air treatment for rheumatic children has recently been emphasised by a number of Authorities, so that all suitable cases of rheumatic children are sent to the Open Air School.

There are now at the school 4 children suffering from severe heart trouble. Two have recently returned from West Wickham. They both seem to be stationary, as regards their disease; one cannot hope for actual improvement in their case. One of the other two children seems to be doing very well, his general condition is definitely better. The other child has been frequently absent from school, and is unfortunately not doing so well.

Apart from these rheumatic children at the Open Air School, there is a certain number of children under observation at the ordinary schools whose condition is not sufficiently severe to justify removing them to the Open Air School.

In this connection a great improvement has recently been made at the school by the fitting of gas radiators in the Dining room, so that the children can now eat their meals in comfort and at ease.

*Treatment by Artificial Sunlight at the Open Air School.*—The following report has been prepared in accordance with the form provided by the Board of Education for the purpose.

Number of children : 46 boys, 11 girls ; total 57.

Type of Lamp : Quartz Mercury Vapour.

#### *Conditions Treated.*

Debility : 31 boys, 9 girls.

Cervical Glands : 8 boys, 1 girl.

Asthma : 4 boys, 1 girl.

Spinal Scoliosis : 1 boy.

Tubercular Spine (disease arrested) : 1 Boy.

Rickets : 1 Boy.

Maximum period of treatment : 3 months.

Minimum period of treatment : 3 weeks.

Three doses a week given on alternate mornings. (Mondays, Wednesdays, Fridays.)

Strength of dose varying to meet individual requirements. Generally commencing at three minutes exposure—increasing one minute a week to ten minutes.

All children receiving the additional benefit of attending the Open Air School.

#### *Results.*

14 boys treated for debility were able to return to ordinary school.

17 boys made satisfactory progress.

6 girls treated for debility were able to return to ordinary school.

3 girls made good progress.

---

5 boys treated for cervical glands were able to return to ordinary school.

2 boys glands healed.

1 boy still under treatment.

1 girl's gland healed.

(Local treatment in addition to general was given to 3 boys and 1 girl.)

---

3 boys treated for asthma have fewer attacks and of shorter duration.

1 boy unsatisfactory, attendance irregular.

1 girl treated for asthma was able to return to ordinary school.

1 boy treated for spinal scoliosis and making satisfactory progress.

1 boy treated for a tubercular spine (disease arrested) and making good progress.

1 boy treated for rickets was able to return to ordinary school.

*Special School.*—This was formerly known as the Observation Class, but was certified as a special school under Part V of the Education Act, 1921, from September 1st, 1932.

The number in the school at the beginning of 1932 was 34. Eight left and 8 were admitted, leaving 34 children in attendance at the end of 1932. Of the 8 who left, 6 had reached the age of 14, 1 returned to ordinary school, and 1 left the town.

*Supervision by the Tuberculosis Officer.*—The total number of reports upon children received from the Tuberculosis Officer during the year was 70. These related to 49 children. Nineteen were definitely excluded from attendance at any school for varying periods, and 29 were recommended for the Open Air School. One was recommended for sanatorium treatment.

*Tuberculosis in School Children.*—The number of children of school age notified to be suffering from tuberculosis each year from 1925 is shown in the following statement :—

NOTIFICATIONS RECEIVED AT AGES 5-14 YEARS DURING THE  
YEARS 1925 TO 1932.

	Pulmonary Tuberculosis.		Non-Pulmonary Tuberculosis.		
	Boys.	Girls.	Boys.	Girls.	
1925 ...	15	13	9	5	
1926 ...	10	6	6	8	
1927 ...	25	13	10	6	
1928 ...	9	9	3	1	
1929 ...	6	6	3	6	
1930 ...	3	1	2	4	
1931 ...	2	2	1	2	
1932 ...	—	1	2	2	

*Voluntary Agencies.*—Every year a number of delicate children are sent for a change of air to the seaside by members of the Invalid Children's Aid and Preventive Aid Societies. 43 were sent away during 1932, and all had been examined and passed as suitable by the Assistant School Medical Officer.

Other voluntary associations which carry on work among school children, and which give most valuable help, include the Care Committee, the Central Aid Society, and the Voluntary Association for Mental Welfare. The work which they do has been mentioned in previous Annual Reports, to which reference may be made.

The Inspector of the National Society for the Prevention of Cruelty to Children gave assistance in several cases during the year.

An Occupation Centre for low grade mentally defectives established and managed by the Cambridge Voluntary Association for Mental Welfare has been in existence since 1929. The premises used are those of the old "Hope Class" in Paradise Street. Their use has been granted free of charge to the Association by the Education Committee.

It is open in the afternoons every week-day except Saturday from 2 to 4.30 p.m. The number attending at present is seventeen; of whom only five are boys. The number under 16 years of age is six.

*Milk and Cod Liver Oil.*—The number of children having cod liver oil and malt in school during 1932 was 1,165, an increase of 445 over the previous year. In 1932 2,410 children had one-third of a pint of milk daily (guaranteed free from tubercle). In 1931 the number was 2,396.

*Institutional Care.*—The number of defective children maintained in Institutions by the Education Committee during 1932 was: 2 blind, 6 deaf and dumb, 1 mentally defective, 1 epileptic, and 2 "heart" cases.

No children were notified to the Local Control Authority during 1932.

#### EMPLOYMENT OF SCHOOL CHILDREN.

The number of children examined and certified under the Bye-Laws regulating the employment of school children was 77.

There was only 1 application for a medical certificate for street trading or public entertainments.

TABLE I.—RETURN OF MEDICAL INSPECTIONS.

#### A. ROUTINE MEDICAL INSPECTIONS.

Number of Code Group Inspections.

Entrants ...	...	...	...	691
Intermediates	...	...	...	706
Leavers ...	...	...	...	835
		Total	...	2232
Number of other Routine Inspections	...	...	...	Nil.

#### B. OTHER INSPECTIONS.

Number of Special Inspections	...	...	...	1678
Number of Re-Inspections	...	...	...	1288
		Total	...	2966

TABLE II.—A. Return of Defects found by Medical Inspection in the year ended December 31st, 1932.

		Routine Inspections.	Special Inspections.
		No. of Defects	No. of Defects
Defect or Disease.		Requiring treatment.	Requiring treatment.
Malnutrition	...	27	6
Uncleanliness (see Table IV., Group V.)			1
Skin	Ringworm : Scalp	...	2
	Body	...	3
	Scabies	...	4
	Impetigo	...	89
	Other Diseases (Non-Tuberculous)	...	56
	Blepharitis	...	19
	Conjunctivitis	...	23
	Keratitis	...	—
	Corneal Opacities	...	1
Eye	Defective Vision (excluding Squint)	78	97
	Squint	6	12
	Other Conditions	6	36
Ear	Defective Hearing	10	6
	Otitis Media	1	11
	Other Ear Diseases	1	5
Nose	Enlarged Tonsils only	65	224
and	Adenoids only	6	4
Throat	Enlarged Tonsils and Adenoids	7	20
	Other Conditions	13	9
Enlarged Cervical Glands (Non-Tuberculous)			5
Enlarged Submaxillary Glands	...	18	2
Defective Speech	...	—	—
Teeth—Dental Diseases	...	—	—
	(see Table IV., Group IV.)		
Heart	Heart Disease :		
and	Organic	...	2
Circulation	Functional	...	8
	Anaemia	...	1
	Bronchitis	...	2
Lungs	Other Non-Tuberculous Diseases	17	1

TABLE II.—(continued.)

	Defect or Disease.	Routine Inspections.		Special Inspections.	
		No. of Defects	Requiring treatment.	No. of Defects	Requiring treatment.
Tuber- culosis	Pulmonary :				
	Definite ...	...	...	...	...
	Suspected ...	...	...	...	...
	Non-Pulmonary :				
	Glands ...	...	...	...	...
	Spine ...	...	...	...	...
	Hip ...	...	...	...	...
	Other Bones and Joints				
	Skin ...	...	...	...	...
	Other Forms ...	...	...	...	...
Nervous System	Epilepsy ...	...	...	...	...
	Chorea ...	...	...	2	1
	Other Conditions ...	...	...	2	2
Deform- ities	Rickets ...	...	...	4	2
	Spinal Curvature ...	...	...	1	2
	Other Forms ...	...	...	9	9
Other Defects and Diseases		...	...	6	9
				315	6

B. Number of Individual Children found at Routine Medical Inspection to require Treatment (excluding Uncleanliness and Dental Diseases).

Group.	Number of Children.		Percentage of Children found to require Treatment
	Inspected	Found to require Treatment	
Code Groups :			
Entrants ...	...	691	7·4
Intermediates ...	...	706	14·8
Leavers ...	...	835	10·4
Total (Code Groups) ...	...	2232	10·9
Other Routine Inspections ...	...	Nil	Nil

TABLE III. Return of all Exceptional Children in the Area.

			Boys	Girls	Total
Children suffering from the following types of Multiple Defect, i.e., any combination of Total Blindness, Total Deafness, Mental Defect, Epilepsy, Active Tuberculosis, Crippling (as defined in penultimate category of the Table), or Heart Disease ... ... ... ...					
Blind (including partially blind).	(i.) Suitable for training in a School for the totally blind.	At Certified Schools for the Blind ... ... ...	1	1	2
		At Public Elementary Schools	—	—	—
Deaf (including deaf and dumb & partially deaf).	(ii.) Suitable for training in a School for the partially blind.	At other Institutions... ...	—	—	—
		At no School or Institution ...	—	—	—
Mentally Defective.	(i.) Suitable for training in a School for the totally deaf or deaf and dumb.	At Certified Schools for the Deaf... ... ...	4	1	5
		At Public Elementary Schools	—	—	—
Epileptics.	Feeble-minded.	At other Institutions... ...	—	—	—
		At no School or Institution ...	—	—	—
	Notified to the Local Mental Deficiency Authority <i>during the year.</i>	At Certified Schools for MENTALLY DEFECTIVE CHILDREN ...	28	9	37
		At Public Elementary Schools	6	7	13
	Suffering from severe epilepsy.	At other Institutions... ...	—	—	—
		At no School or Institution ...	—	—	—
	Suffering from epilepsy which is not severe.	At Certified Schools for EPILEPTICS ... ... ...	—	1	1
		At Certified Residential Open Air Schools ... ...	—	—	—
		At Certified Day Open Air Schools ... ... ...	—	—	—
		At Public Elementary Schools	—	—	—
		At other Institutions... ...	—	—	—
		At no School or Institution ...	—	—	—
		At Public Elementary Schools	2	2	4
		At no School or Institution ...	—	—	—
		At Day Open Air School ...	—	1	1

TABLE III.—(continued).

			Boys	Girls	Total
	Active pulmonary tuberculosis (including pleura and intrathoracic glands).	At Sanatoria or Sanatorium Schools approved by the Ministry of Health or the Board ... ... ...	—	—	—
		At Certified Residential Open Air Schools ... ...	—	—	—
		At Certified Day Open Air Schools ... ... ...	—	—	—
		At Public Elementary Schools	—	—	—
		At other Institutions... ...	—	—	—
		At no School or Institution ...	—	—	—
Physically Defective.	Quiescent or arrested pulmonary tuberculosis (including pleura and intrathoracic glands).	At Sanatoria or Sanatorium Schools approved by the Ministry of Health or the Board ... ... ...	—	—	—
		At Certified Residential Open Air Schools ... ...	—	—	—
		At Certified Day Open Air Schools ... ... ...	5	2	7
		At Public Elementary Schools	—	—	—
		At other Institutions... ...	—	—	—
	Tuberculosis of the peripheral glands.	At Sanatoria or Sanatorium Schools approved by the Ministry of Health or the Board ... ... ...	—	—	—
		At Certified Residential Open Air Schools ... ...	—	—	—
		At Certified Day Open Air Schools ... ... ...	4	4	8
		At Public Elementary Schools	—	2	2
		At other Institutions... ...	—	—	—
	Abdominal tuberculosis.	At Sanatoria or Sanatorium Schools approved by the Ministry of Health or the Board ... ... ...	—	—	—
		At Certified Residential Open Air Schools ... ...	—	—	—
		At Certified Day Open Air Schools ... ... ...	—	—	—
		At Public Elementary Schools	—	—	—
		At other Institutions... ...	—	—	—
	Tuberculosis of bones and joints (not including deformities due to old tuberculosis).	At Sanatoria or Hospital Schools approved by the Ministry of Health or the Board ... ... ...	—	—	—
		At Public Elementary Schools	1	—	1
		At other Institutions... ...	—	—	—
		At no School or Institution ...	—	—	—
		At Day Open Air School ...	—	1	1

TABLE III.—(continued)

		Boys	Girls	Total
	Tuberculosis of other organs (skin, etc.).			
	At Sanatoria or Hospital Schools approved by the Ministry of Health or the Board ... ... ...	—	—	—
	At Public Elementary Schools	—	—	—
	At other Institutions... ...	—	—	—
	At no School or Institution ...	—	—	—
	Delicate Children, <i>i.e.</i> , all children (except those included in other groups) whose general health renders it desirable that they should be specially selected for admission to an Open Air School.			
	At Certified Residential Cripple Schools ... ...	—	—	—
	At Certified Day Cripple Schools ... ... ...	—	—	—
	At Certified Residential Open Air Schools ... ... ...	—	—	—
	At Certified Day Open Air Schools ... ... ...	50	37	87
	At Public Elementary Schools	33	24	57
	At other Institutions... ...	—	—	—
	At no School or Institution ...	—	—	—
Physically Defective. (continued).	Crippled Children (other than those with active tuberculous disease) who are suffering from a degree of crippling sufficiently severe to interfere materially with a child's normal mode of life.			
	At Certified Hospital Schools	—	—	—
	At Certified Residential Cripple Schools ... ...	—	—	—
	At Certified Day Cripple Schools ... ... ...	—	—	—
	At Certified Residential Open Air Schools ... ...	—	—	—
	At Certified Day Open Air Schools ... ... ...	3	3	6
	At Public Elementary Schools	12	5	17
	At other Institutions... ...	—	—	—
	At no School or Institution ...	—	—	—
	Children with heart disease, <i>i.e.</i> , children whose defect is so severe as to necessitate the provision of educational facilities other than those of the public elementary school.			
	At Certified Hospital Schools	—	—	—
	At Certified Residential Cripple Schools ... ...	—	—	—
	At Certified Day Cripple Schools ... ... ...	—	—	—
	At Certified Residential Open Air Schools ... ...	—	—	—
	At Certified Day Open Air Schools ... ... ...	1	2	3
	At Public Elementary Schools	3	1	4
	At other Institutions... ...	—	—	—
	At no School or Institution ...	—	—	—

TABLE IV. Return of Defects Treated during the year ended 31st December, 1932.

TREATMENT TABLE.

Group I. Minor Ailments (excluding Uncleanliness, for which see Group V.)

Disease or Defect.	No. of Defects treated or under treatment during the year.		
	Under the Authority's Scheme.	Otherwise	Total.
Skin			
Ringworm—Scalp ... ...	1	1	2
" Body ... ...	—	3	3
Scabies ... ... ...	—	3	3
Impetigo ... ... ...	81	13	94
Other Skin Disease ... ...	90	14	104
Minor Eye Defects ... ...	62	11	73
(External and other, but excluding cases falling in Group II.)			
Minor Ear Defects ... ...	—	5	5
Miscellaneous ... ... ...	330	32	362
(e.g., minor injuries, bruises, sores, chilblains, etc.)			
Total ... ...	566	80	646

Group II. Defective Vision and Squint (excluding Minor Eye Defects treated as Minor Ailments—Group I.)

Defect or Disease.	No. of Defects dealt with.			Total.
	Under the Authority's Scheme.	Submitted to refraction by private practitioner or at hospital apart from the Authority's Scheme.	Otherwise.	
Errors of Refraction (including squint)	142	—	—	142
Other Defect or Disease of the Eyes (excluding those recorded in Group I.)	—	1	3	4
Total ...	142	1	3	146

Total number of children for whom spectacles were prescribed

(a) Under the Authority's Scheme	...	...	105
(b) Otherwise	...	...	4

Total number of children who obtained or received spectacles

(a) Under the Authority's Scheme	...	...	87
(b) Otherwise	...	...	4

**Group III. Treatment of Defects of Nose and Throat.**  
**Number of Defects.**

Received Operative Treatment.		Received other forms of Treatment.	Total number treated.	
Under the Authority's Scheme, in Clinic or Hospital.	By Private Practitioner or Hospital, apart from the Authority's Scheme.			
56	—	56	19	75

**Group IV. Dental Defects.**

(i) Number of Children who were :—		(2) Half-days devoted to :—
(a) Inspected by the Dentist :—		Inspection ... 24 Treatment ... 734 } Total 758
Aged :	Total 4178	Administration (including teaching) ... —
Routine Age Groups	3 3 4 39 5 300 6 324 7 442 8 450 } Total 4178 9 488 10 537 11 582 12 482 13 282 14 249	... 4541
Specials ...	... 1169	(3) Attendances made by Children for treatment ...
Grand Total	... 5347	(4) Fillings :— Permanent Teeth 10565 } Temporary Teeth 192 } Total 10757
(b) Found to require treatment	4321	(5) Extractions :— Permanent Teeth 435 } Temporary Teeth 3266 } Total 3701
(c) Actually treated ...	4152	(6) Administrations of general anaesthetics for extractions ... 104
(d) Re-Treated during the year	2441	(7) Other operations :— Permanent Teeth 181 } Temporary Teeth 408 } Total 589

**Group V. Uncleanliness and Verminous Conditions.**

(i)	Average number of visits per school made during the year by the School Nurses	... ... ...	8.2
(ii)	Total number of Examinations of children in the Schools by School Nurses ...	... ... ...	19,684
(iii)	Number of individual children found unclean ...	...	824
(iv)	Number of children cleansed under arrangements made by the Local Education Authority ...	...	Nil
(v)	Number of cases in which legal proceedings were taken : (a) Under the Education Act, 1921 ... (b) Under School Attendance Bye-Laws ...	...	Nil
		...	12

**R E P O R T**  
ON  
**DENTAL INSPECTION**  
AND  
**TREATMENT OF SCHOOL CHILDREN**  
**FOR THE YEAR 1932**

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BY

**W. BAIRD GRANDISON, L.D.S., R.C.S., Edin.**  
**PUBLIC DENTAL OFFICER**

THE DENTAL INSTITUTE,

35 PARK SIDE,

CAMBRIDGE.

*December 31st, 1932.*

*To the Chairman and Members of the Education Committee.*

LADIES AND GENTLEMEN,

I have the honour to submit the Twenty-fifth Annual Report on the working of the Dental Institute, covering a period from January 1st, 1932, to December 31st, 1932, inclusive.

It is with regret that I have again to inform you that it has not been possible to inspect and treat the teeth of every elementary school child, even although we have enjoyed a year with little or no interruption, and the reason will be clear to those who will be good enough to interest themselves in the pages of this report.

I have endeavoured to be very explanatory, I hope clearly, more particularly as we are beset with certain difficulties demanding solution and, in addition, I have given attention to the requests made in the report by Sir Geo. Newman for the year 1931, and also to the recommendations of the Economy Committee on Local Government, as far as the dental inspection and treatment of the school child is concerned.

I would like to thank my assistant, dental attendants, and all those who have co-operated with me in the working of the Dental Institute for the year 1932.

I am,

Ladies and Gentlemen,

Your obedient Servant,

W. BAIRD GRANDISON.

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# Report on the Dental Inspection and Treatment of Elementary School Children

FOR THE YEAR 1932.

The number of elementary school children in average attendance in Cambridge is 6446, and each one should receive the benefit of an annual routine inspection with treatment if necessary, but, owing to circumstances, which will be explained throughout the pages of this report, the dental officers have not been able to complete the dental inspection of all the elementary school children this year. In the year under review 4178 children were submitted for routine inspection. Of this number 1026 were found to have dentitions which did not require treatment, 3152 required treatment, and 2983 received complete treatment. In addition 1169 children attended without appointment and received treatment, making a total number of 5347 children inspected and 4152 treated. The total number of attendances made by 4152 children was 4541.

All dental inspections of routine cases are conducted at the schools, and dental treatment is conducted partly at the schools (schools too far distant to permit of the children travelling to the Central Clinic) and partly at the Central Clinic. The staff available comprises two whole-time dental officers and three whole-time dental attendants, and the hours of work are from 9 a.m. to 12.30 p.m. and from 2 p.m. to 5 p.m., or until the work of each session has been completed. The number of sessions available for all branches of public dental work in the year 1932 was 463, 402 of which were devoted to the dental inspection and treatment of the elementary school child.

Mr. W. B. Grandison. Dr. D. Barron-Cruickshank.

## Number of Sessions

devoted to :

(1)	Administration	...	22	4
(2)	Teaching	...	5	6
(3)	Inspection	...	16	8
(4)	Routine Treatment		317	335
(5)	Orthodontic Treatment	41 (Sat. only)		41 (Sat. only)
(6)	Absent	...	1	8
			<hr/>	<hr/>
			402	402
(7)	M. & C. Welfare and Pre-School Child	61		61
			<hr/>	<hr/>
	Total	...	463	Total 463
			<hr/>	<hr/>

(1) Administration includes attendance by the Senior Dental Officer at the appropriate Committees of the Borough Council, together with the time occupied in the preparation of reports, lectures, etc., and attendances outside Cambridge at certain dental educational conferences.

(2) Teaching : The dental officers were engaged teaching items of dental interest to children of school leaving age, but from July, 1932, this procedure was stopped on condition that the teachers would continue this important work.

(3) Inspection : Two dental officers have been occupied together with two dental attendants during 24 sessions in the inspection of 4178 school children, that is, the equivalent of approximately 174 per session. This is a very large figure, possible only by the nature of the inspection and the manner of its execution. A school child who by a naked eye inspection obviously requires dental attention is passed for treatment without an inspection by probe or mirror. Such children must, unless they refuse treatment, come to the dental clinic and there receive not only a thorough inspection but, in addition, complete treatment. As this number amounts to approximately 70 per cent. of the school population, it can easily be understood that the inspection at school can be accomplished rapidly. On the other hand, school children whose teeth are apparently sound must and do receive a thorough inspection at school by probe and mirror, and the condition of the teeth duly noted on charts specially prepared for the purpose.

The teachers receive all the dental charts in advance of a proposed inspection, distribute the charts to the school children, and at the dental inspection send the children very quickly (generally in groups of 20 or more) to the dentist. Accordingly large numbers can be dealt with satisfactorily in one session, and the saving in educational time which results from this method of procedure is material and greatly valued by the Head Teachers.

#### CONDITION OF THE TEETH AT INSPECTION.

4178 elementary school children were inspected during the year 1932. Of this number 525 were new patients, that is, patients who had never been subjected to routine dental inspection before in Cambridge, 376 children were sound previously, that is, patients who had been previously inspected, but the teeth were such that no treatment was required; the remainder, 3277 children, had been inspected and had received treatment in previous years.

The condition of the teeth of 4178 children, divided into their respective age groups, follows :—

Age.	Number of Children Examined	Number of Temporary Teeth			Number of Permanent Teeth		
		Sound	Decayed Saveable	Decayed Un-saveable	Sound	Decayed Saveable	Decayed Un-saveable
3 Years	3	49	10	1	—	—	—
4 "	39	621	113	34	4	2	—
5 "	300	4452	1096	127	251	57	—
6 "	324	4403	929	210	974	238	4
7 "	442	4784	739	478	2716	750	3
8 "	450	3762	365	451	4162	886	25
9 "	488	2835	151	342	6139	991	36
10 "	537	2043	40	247	8629	1251	53
11 "	582	1256	12	197	11157	1421	69
12 "	482	611	5	71	10053	1172	75
13 "	282	219	—	20	6428	611	32
14 "	249	77	—	10	6126	350	22
Total ...	4178	25112	3460	2188	56639	7729	319*

\* Includes 30 permanent teeth extracted for irregularity only, and 24 permanent teeth extracted as a result of injury.

For every 100 elementary school children in Cambridge therefore there are 600 sound temporary teeth, 82 saveable temporary teeth, 52 unsaveable temporary teeth, 1355 sound permanent teeth, 185 saveable permanent teeth, and 7 unsaveable permanent teeth.

#### CONDITION OF THE TEETH AFTER TREATMENT.

2983 elementary school children received routine dental treatment during the year 1932, and the effect of treatment can best be appreciated by arranging a comparative table, giving the results of dental inspection, together with the rearrangements which naturally follows as a result of treatment.

No. of Children Inspected.	Temporary Teeth.			Permanent Teeth.		
	Sound.	Decayed Saveable.	Decayed Un-saveable.	Sound.	Decayed Saveable.	Decayed Unsavable
Condition of teeth at Inspection ...	4178	25112	3460	2188	56639	7729
Condition of teeth after Treatment...	4178	28387	185	110	63906	462

This comparative table indicates that in the mouth of 4178 children there are, after treatment, only .7 per cent. of teeth (Temporary and Permanent) which show any active caries at all, and the percentage of decayed unsaveable teeth (Temporary and Permanent) amounts to .1 per cent., representing only 121 teeth.

(4) Routine Treatment : The Senior Dental Officer was engaged on 317 sessions and the Assistant Dental Officer on 335 sessions on routine dental work (Treatment). The average number of sessions being therefore approximately 326. 2983 routine dental cases were completed in 326 sessions, giving an average of 9.5 completed cases per two whole-time dentists, or 4.7 per session each dentist. In addition, 1169 casual cases attended, and the total number of attendances (Routine and Casual) was 4541, which divided by 326 gives an average per dentist of approximately 7 per session. (4.7 completed, 2.3 incomplete.)

(5) Orthodontic Treatment : Two whole-time dentists are engaged during one session each week (Saturday mornings only) on the correction of misplaced teeth, except for the first and second appointments when the children attend with their parents during the recognised school hours. The appliances used are of the fixed and removable varieties, and this work, which during the year 1932 was available for 54 children, offers great possibilities and gives immense satisfaction to parents, child and dentist. The cost which never exceeds £2 2s. Od. is paid by the parents. Any conservative work on the teeth of these children which may become necessary is likewise completed on Saturday mornings, and the few casual cases who apply for the relief of pain are treated. 41 sessions were devoted to this work.

#### ROUTINE DENTAL WORK.

The nature and quantity of the work necessary to treat satisfactorily 2983 elementary school children is as follows :—

A.	Amalgam or Synthetic	...	...	...	...	5326
B.	{ Amalgam (Lined) or Synthetic (Lined)	...	...	...	...	3266
C.	{ Amalgam or Synthetic with Pulp Preservation ...					1803
	{ Amalgam or Synthetic with Root Canal Treat- ment	...	...	...	...	23
	Total	...	...	...	...	10418

In the continued absence of any definite scheme of prevention, the object of the school dental service must be "to satisfactorily control the spread of the disease by a conscientious system of conservative dentistry." Furthermore, owing to the volume of dental work it has been pointed out that most, if not all, of our endeavours as far as the filling of teeth is concerned should be concentrated preferably on the permanent dentition and the second temporary molars. In the year 1932, 10,418 filling operations have been performed, and only 155 of these have been inserted into the cavities of temporary teeth. Allowing therefore five minutes for the filling of each cavity in a temporary tooth the time occupied throughout the year on the filling of temporary teeth amounted to approximately 4 sessions, leaving 322 sessions for the remainder of our

dental work. Assuming (for the time factor) that 322 sessions were devoted to the conservative work of the permanent dentition, it will be noted that 10,263 filling operations were performed by two whole-time dentists. Assuming, also, that one filling in a permanent tooth occupies on the average 15 minutes, and that a session is of 3 hours' duration (the usual dental session is stated to be  $2\frac{1}{2}$  hours), each dentist should on this basis complete 12 fillings, but it will be noticed that 10,263 fillings in permanent teeth were completed in 322 sessions, giving an average of 31 per session, or 15.5 per dentist. These facts are not without interest, and the particulars so far tabulated could, in themselves, constitute a record of work sufficient to occupy the attention of two whole-time dental officers, but, in order to pass as sound 2983 children who required treatment further work was necessary as follows:—

D.	Teeth treated with Nitrate of Silver (Howe's Method) ...	...	...	3468
EXTRACTIONS E.*	{ Temporary Teeth ...	...	...	2078
	{ Permanent Teeth ...	...	...	308
				5854
		Total operations	...	16272

\* With the exception of very loose temporary teeth, anaesthetics, either local or general, are always used for the removal of teeth.

Unfortunately school children present teeth on occasions which are in such a condition that extraction is essential, and must be carried out to remove sepsis and prevent a generalised infection. Similarly, decayed teeth, mainly temporary teeth not sufficiently diseased to merit removal, must be attended, and thus we resort to the use of an ammonical solution of Silver Nitrate and Formalin, having first removed as far as possible all rough and overhanging edges which, if allowed to remain, would harbour food and cause harm, possibly to the soft tissues of the mouth. Hence the statistics tabulated under D and E are likewise explained.

To revert, however, to the subject of filling permanent teeth. There can be not the slightest doubt that this forms the most important work of the school dentist, and must therefore receive the utmost consideration. It will be noticed that fillings are divided into three types, under the headings A, B, and C. The success of a scheme of school dentistry can be, to a great extent, measured by the statistics tabulated under these headings. We must avoid extractions of permanent teeth, that is fully understood, but we should likewise be invited to avoid large fillings, fillings that is to say, which involve the pulp. In the year 1932 only 23 Root Canal treatments have been performed, but 1803 fillings have been inserted which necessitated pulp preservation, and although this work is satisfactory and accomplished with no great difficulty, the size of the cavity is such that the filling occupies the major portion of the tooth and so must constitute a weakness. A scheme of school dentistry which could insure the inspection and, if necessary, the treatment of every school child every six months would, in a short time, produce fillings which would all be tabulated under heading A, or to avoid unnecessary controversy on the question of lined cavities I would add under headings

A and B. Finally, it is advisable to state that no fillings tabulated under heading C could possibly be completed in 15 minutes or even 30 minutes, and so once again the time factor is important.

#### CASUALS.

In addition to the work recorded above, work was performed on certain children who visited the dental institute without an appointment. The object in the majority of cases was simply to seek relief from pain or to point out some form of simple irregularity. 1169 children visited the institute casually and the treatment was generally incomplete.

Work done under this heading was as follows :—

FILLINGS	{ A. In Permanent Teeth	...	...	...	302
	B. In Temporary Teeth	...	...	...	37
EXTRACTIONS	C. Of Permanent Teeth	...	...	...	127
	D. Of Temporary Teeth	...	...	...	1188
	E. Teeth treated with Nitrate of Silver (Howe's Method)	...	...	...	418
	Total operations	...	...	...	2072

#### SCHOOL CHILDREN WHO WERE UNTREATED.

Only a very few years ago the Senior Dental Officer and others interested were seriously perturbed by the number of refusals of dental treatment in Cambridge (even then much lower in comparison with other areas), and certain suggestions were introduced to accomplish which both time and thought was necessary. A new system of personal visitation by the dental attendants, a course of dental hygiene to children of school leaving age, further renewed assistance from the teaching profession and, later, the use of "Block anaesthesia" for the painless filling and extraction of teeth. In consequence of such endeavour the position is now somewhat reversed, as the numbers now accepting treatment, or who would accept treatment if given the opportunity, are greater than the capacity of the dental officers to deal with the situation under present conditions, whether permanently or temporarily it is most difficult to contemplate. The total number refusing dental treatment in the year 1932, for example, was 169, being 5.3 per cent. of the total number requiring treatment, or 4 per cent. of the total number inspected. I must confess I never anticipated an acceptance of approximately 95 per cent. from a voluntary system, and for this most satisfactory achievement all those who assisted me so untiringly are to be congratulated, together with the parents and the children themselves.

But why should a large acceptance of dental treatment materially affect the situation? To attempt an explanation permit me to quote the percentage of refusals as recently as the year 1929, namely, 730 or 21.4 per cent., so that in the year 1932 the dental officers must treat in comparison with that year 16 more children in every 100 requiring treatment, a number, that is to say, exceeding 470. Further, as many of these 470 children had refused treatment previously on one or more occasions, the quantity and extent of the treatment considered necessary was naturally greater than that required by those children who had attended the clinic regularly. It is calculated that 470 children required on an

average just over 4 fillings each in Permanent Teeth, making in all a total of 1880 fillings. On the basis that one filling in a Permanent Tooth occupies 15 minutes, 1880 fillings would occupy 78 dental sessions of three hours each, with two whole-time dentists engaged. When, therefore, one is reluctantly compelled to inform the authority that certain children have failed to benefit from the usual annual routine dental inspection and treatment, information of this character is of very great importance and demands the utmost consideration. Failure to induce school children to obtain any necessary dental treatment, and to ignore the numbers refusing treatment, would create a situation simulating private practice, whereby only those who seek dental attention may receive it. Again, to simply perform urgent dental operations and hasten through the work, so that every school child could at least be inspected once annually, would produce a never-ending stream of casuals, so large that the dental officers would be employed whole-time alleviating the sufferings of youth and profiting them nothing in the greater and more far-reaching problem of good health resulting from a sound dentition. An annual routine inspection with treatment is, as everyone interested knows, the minimum requirement for a satisfactory school dental service, but it cannot be by deliberately neglecting the teeth of certain school children in order to cover the whole school population that anything like satisfactory results can accrue. One final example: How absurd it is in a child aged 6 years to fill a coronal cavity in a permanent molar and leave a distal cavity in a temporary molar untouched. Such treatment is mal-practice and would result in a large percentage of cases, in not only the mesial side of the molar (permanent) becoming infected, but more often than one would care to imagine in the loss of the tooth on or before the next annual inspection.

Age.	Number of Children Examined.	No Decay including Both Dentitions.		Remarks.
		Number of Children.	Percentage.	
5 Years ...	300	61	20.3	A. Children with no decay present number 1017.
6 " ...	324	61	18.8	
7 " ...	442	76	17.2	
8 " ...	450	80	17.7	
9 " ...	488	108	22.1	
10 " ...	537	110	20.5	B. There is a further increase in the number of children with decay present.
11 " ...	582	166	28.5	
12 " ...	482	135	28.0	
13 " ...	282	93	33.0	1931 = 28.5 (No Decay.)
14 " ...	249	127	51.0	
Total ...	4136	1017	24.5	

\* Ages 3 and 4 are omitted from the above.

Age.	Number with Permanent Teeth.	Number of Children whose Permanent Teeth were					Unsaveable but Untreated	
		Sound.	Made Artificially Sound.		Saveable but Untreated.			
			Approx.%	Approx.%	Approx.%	Approx.%		
5 Years	93	62	66	28	30	3	3	
6 „ „	257	142	55	104	40	11	4	
7 „ „	428	152	35	266	62	10	2	
8 „ „	448	113	25	315	70	20	4	
9 „ „	488	145	30	319	65	24	5	
10 „ „	537	138	25	370	70	29	5	
11 „ „	582	192	33	368	64	22	3	
12 „ „	482	163	34	298	62	21	4	
13 „ „	282	100	38	177	61	5	1	
14 „ „	249	131	53	118	47	—	—	
Total ...	3846	1338	35	2363	61	145	3	

The percentage of children with sound Permanent Teeth is also lower, being 42 per cent. in the year 1931.

Consideration at length has already been given to the extra dental work involved by the increased number of acceptances, and further consideration can now be given to the same subject from another cause, namely, "The incidence of dental disease" which is quite definitely increasing and somewhat alarmingly. The statistics relating to the percentage of children with no decay present covering the last five years are as follows :—

#### No Decay, including Both Dentitions.

Year.	No Examined.	No. of Children with no Decay Present.	Percentage.
1928	6080	2082	34.2
1929	5301	1865	35.1
1930	5990	2272	37.9
1931	3507	1000	28.5
1932	4136	1017	24.5

Again the Statistics relating to the Permanent Teeth only, covering the same period, are as follows :—

Year.	No. Examined.	No. of Children whose Permanent Teeth were Sound.	Percentage.
1928	5319	2981	56
1929	4690	2597	55
1930	5263	2735	52
1931	3075	1304	42
1932	3846	1338	35

One is cognisant of the fact that not only in the year 1932, but in the previous year, all the children attending our elementary schools were not inspected for reasons associated with the resignation of an assistant, followed later by the illness of his successor, unavoidable circumstances which must to a large extent not only retard progress but produce a larger percentage of decay in the teeth of those children who were not treated, and though I have no wish to minimise the possible loss of time involved, I am nevertheless convinced from statistics which I will tabulate that incidence rather than neglect is the more serious and therefore the more likely, in conjunction with an increased acceptance, of treatment, to serve as the cause of the inability of the dental officers to complete the round of dental inspection and treatment in one year.

Children born in the year 1918, and who were 10 years of age in the year 1928 had a percentage of sound permanent teeth amounting to 52 per cent., in the year 1930 to 54 per cent., and in the year 1932 to 53 per cent. (children, that is to say, who will leave school this year). A high standard throughout, whereas children born in the year 1923, and who were five years of age in the year 1928, had a percentage of sound permanent teeth amounting to 87 per cent., in the year 1930 to 46 per cent., and in the year 1932 to 30 per cent. (children, that is to say, who were 9 years of age in the year 1932). Again a study of our graph giving the percentage of decay present in the five year old group of children before treatment in each year of our dental scheme has shown a definite increase from the year 1922. The obvious inference to be drawn from statistics such as these is simply this, "That children born in the year 1918 had the benefit of some unknown factor which helped to maintain the teeth in a reasonably sound condition throughout their school career. Their resistance to dental caries or their immunity to dental caries was established to a degree infinitely greater than those children born subsequently, with the result that children whose ages are less than fourteen years require greater dental attention, and therefore absorb more time to an extent not easy to estimate, but probably not less than 60 sessions annually. That is to say that the increased incidence necessitates at least 60 sessions to overcome the additional work involved."

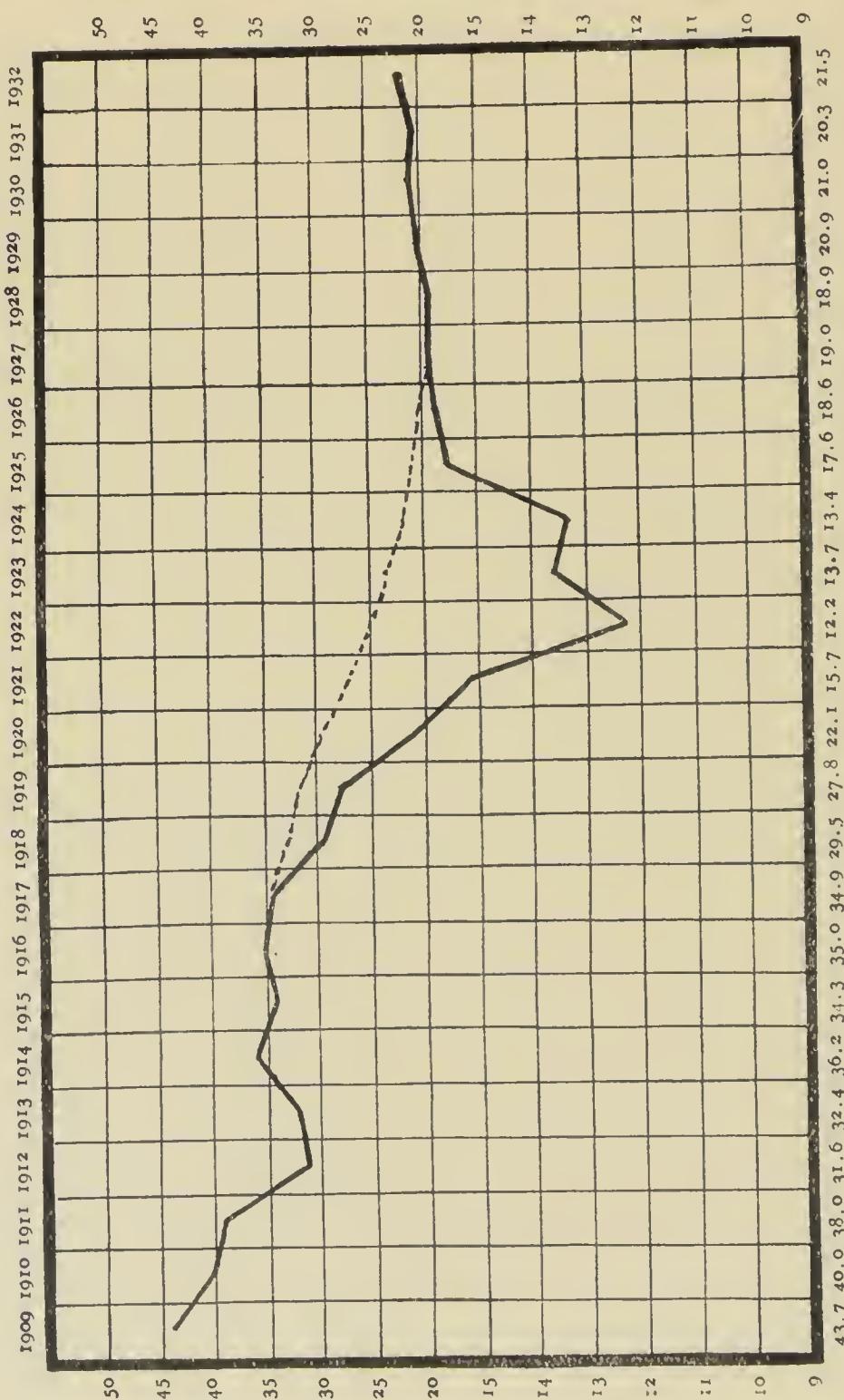
It is equally important to note that the quantity of the dental work executed has greatly exceeded that of any previous year that the dental scheme has been in existence, the fillings in Permanent Teeth (the most noteworthy item) reaching the enormous total for two dentists of 10,565, and yet the total number of children treated (Routine Cases only) varies very little from year to year. Thus in the year 1928 the total number of children treated was 2996; in the year 1929, 2676; in the year 1930, 3078; in the year 1931, 2357; and in the year 1932, 2983; which clearly proves the truth of the statement made by Sir Geo. Newman in his report for the year 1929, "That 1500 children under certain conditions will be the maximum number a dentist can treat in one year!" Moreover, the cleaning and polishing of the teeth by the dental attendants working under the supervision of the dentist, so satisfactory in the year 1931, continued during the year 1932 with equal satisfaction, there being 1765 such operations, and the total results of our joint endeavours has been to render the teeth of 4178 of our elementary school children in Cambridge satisfactory to a degree that I should welcome the most intricate dental inspection from any source whatever, professional in character.

The unsaveable Permanent Teeth, which numbered 319, in the mouths of 4178 children at inspection, were distributed thus:—

195	children	had	1	unsaveable	tooth	each.
44	"	"	2	"	teeth	"
1 child	"	"	3	"	"	"
7 children	"	"	4	"	"	"
1 child	"	"	5	"	"	"
248 children had 319 unsaveable teeth.						

It should be noted that all sound or saveable Permanent Teeth removed for orthodontic purposes are charted as unsaveable, and are included in the above table.

Diagram.—Showing the percentage of decay in the temporary teeth of the five year old group of children from 1909 to 1932 (inclusive).



The Dotted Line gives the assumed course dealing with dental disease in the 5 year old group of children in the absence of a War Period.

The year 1932 has been noteworthy for the increased interest displayed in dental research, not only by the dental profession, but by many outside, notably the Ministry of Health and Local Authorities, accordingly it is my intention to attract renewed attention to our graph, which shows the percentage of decay present in the five year old group of children in each year of our dental scheme, a graph carefully compiled and, to me, of the utmost importance and interest. Quite recently the Ministry of Health have issued a circular, No. 1290, and headed "Nutrition," in which reference is made to the work of the Mellanby's on behalf of the Medical Research Council. The work of the Mellanby's, notably that of Mrs. Mellanby, in relation to the influence of diet on the structure and arrangement of teeth is well known, and is concerned with the addition of Vitamin D to the diet. The experimental work was begun on animals (chiefly dogs), and some interesting and absorbing results recorded thus : "That teeth of good structure can be invariably secured by an adequate supply in diet of fat soluble vitamins, especially Vitamin D"; and "That whatever the dental structure the amount and character of the secondary dentine formed in response to an outside stimulus such as attrition depends to a large extent upon the supply of these Vitamins." The success of Mrs. Mellanby's research on animals was followed by an investigation on similar lines with institutional children, the teeth of whom formed the medium for further research, and some degree of success has resulted. "In those children receiving an added ration of fat soluble vitamin (Cod Liver Oil) as compared with those whose added ration consisted of treacle and olive oil respectively, the progress of caries in permanent teeth was significantly retarded." Mrs. Mellanby's investigations form a rare achievement deserving of the highest praise, but there are some striking facts which to my mind necessitate further research effort in order to render the results more conclusive, particularly in relation to the enamel. For example : During experimental work on dogs, Mrs. Mellanby has been unable to produce dental caries in dogs by artificial means. The dog is immune to caries of the teeth, even though there is abundant evidence of faulty enamel, and numerous deep pits and fissures, this in conjunction with the fact that progress of dental disease is retarded points rather to possible changes in the dentine structure rather than to the prevention of decalcification of the enamel, even though this structure may be of good quality. Further, the experiments were conducted in institutions, presumably, therefore, the children were under a measure of control, cereals were reduced or withheld, and in addition to the fat soluble vitamin children would benefit to no mean extent from institutional care and feeding which would include as an example a generous supply of milk. What Evelyn Sprawson describes as "an amazing discovery" is significant in this direction; namely, "As far as we can see, if a child is started on a daily ration of raw milk (*i.e.*, milk which has never been treated above body temperature), *\*containing a substance which I will call Y*, at any time before the eruption of the first permanent molars, the child does not get caries in the teeth which erupt subsequently. Neither I," says Evelyn

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\* Words in *italics* my own.

Sprawson, "nor several other dental surgeons who have given the most timely aid in finding and enquiring about other similar cases, have yet met with an exceptional case." In the year 1926 I, in conjunction with Dr. Stott, initiated an investigation into the effects of toxæmia on enamel formation, resulting from the dental inspection of a few children known to be living in close association with a chronic infection (tuberculosis), but who were entirely free from any signs or symptoms of the disease having, presumably by repeated small doses, acquired, temporarily at least, an immunity or resistance, and in consequence had enamel so perfectly calcified that caries never supervened. Accordingly, is there a substance which I will call X held in solution in the maternal circulation or in mother's milk which can prevent the susceptibility to an organism, or a group of organisms, without which caries cannot arise? And likewise the spontaneous arrest of caries could be due to an acquired immunity, and not to some vital reaction from within. It is possible, to my thinking, that the hidden substance in raw milk which I have marked as Y might be the same substance as that marked X, and the subject is sufficiently interesting to merit research to isolate, for example, some enzyme, hormone, or even meta-protein from raw milk, a substance which is obviously destroyed on treating much above body temperature. To support further the theory of an acquired immunity, it is interesting to record that in the very few areas where it is known cattle have been free from tuberculosis for some considerable time, the children receiving the milk have teeth, it is stated, very much worse than those in other areas. Thus, by a long absence of any signs or symptoms of some chronic infection, the necessity for the unknown quantity X or Y disappears, and with it the immunity factor. In the graph before us, had there been no war period the dotted line indicates approximately the type of graph one might reasonably have expected, but a remarkable drop in the percentage of decay in the five year old group of children commenced in the year 1920 and ended in the year 1922 children, that is to say, who were born in the years 1915, 1916, and 1917. No scientific experiment was introduced during these years to account for such a remarkable phenomena, but we were passing through a most trying experience, and by necessity much that was harmful to tooth formation was removed from the diet of the expectant mother and the child, and replaced by foods much more in keeping with present-day research, especially an abundance of raw milk, thus introducing anew the unknown quantities X and Y. Again during this period wages were high, those at home, though in very many cases hampered by anxiety, had a freer existence, and both fresh air and rest were enjoyed in a larger measure than formerly or since. Finally, the teeth of those children born in the years 1915, 1916 and 1917 were maintained throughout the whole of their school life in a condition much more satisfactory without treatment than their predecessors or those born subsequently.

#### TEACHING OF DENTAL HYGIENE.

The teaching of dental hygiene by the dental officers to elementary school children was discontinued after July, 1932, as it was apparent that more time was necessary for treatment in so much that the dental officers were unable to complete the inspection and, if necessary, the

treatment of all our elementary school population. The permission to stop the lectures, however, was only obtained on the understanding that a Course of Lectures on Dental Hygiene would be continued by the teachers themselves.

An examination was held in July on this subject and 71 boys and girls took part in the examination, the questions for which were similar to those used in the year 1931, and the result was as follows :—

Number of Entries	...	...	...	...	71
Number of 1st Class Certificates	...	...	...	...	52
Number of 2nd Class Certificates	...	...	...	...	4

To obtain a First-class Certificate 65 per cent. or over was required.

To obtain a Second-class Certificate 50 per cent. to 64 per cent. was necessary.

The number of children accepting dental treatment has been very much improved since the inauguration of these lectures to school children.

**APPENDIX.****OTHER OPERATIONS, 1932.**

Orthodontic Cases	...	...	...	...	...	...	54
Jaw Injury	...	...	...	...	...	...	Nil
Crowns or Inlays (resulting from injury to anterior teeth)	...	...	...	...	...	...	8

**CHILDREN.**

Cleaning of Teeth (performed by Dental Attendants under supervision)	...	...	...	...	...	...	1765
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